**Claims:**

1. A process for reducing solids containing iron oxide, in particular iron ore, in which fine-grained solids are heated and at least partly calcined in a preheating and/or calcining stage (2, 9), are prereduced in a first fluidized-bed reactor (14) downstream of the preheating and/or calcining stage (2, 9), and are reduced in a second fluidized-bed reactor (16) and briquetted in a briquetting stage (20) downstream of the second reactor (16) at a temperature above 500°C, **characterized in that** magnesite together with the solids containing iron oxide is added to the preheating and/or calcining stage (2, 9), which magnesite is at least partly calcined in the preheating and/or calcining stage (2, 9) to obtain magnesium oxide.

2. The process as claimed in claim 1, **characterized in that** the magnesite together with the solids containing iron oxide is calcined in the preheating and/or calcining stage (2, 9) at temperatures of 400 to 1250°C, in particular at 540 to 1000°C.

3. The process as claimed in claim 1 or 2, **characterized in that** more than 50 %, in particular about 90 %, of the magnesite added to the preheating and/or calcining stage (2, 9) together with the solids containing iron oxide has a grain size between 300 µm and 3 mm, in particular between 400 µm and 1 mm.

4. The process as claimed in any of the preceding claims, **characterized in that** between 0.1 and 5 wt-%, in particular about 0.5 wt-% of magnesite are added to the solids containing iron oxide before and/or during the supply into the preheating and/or calcining stage (2, 9).

5. The process as claimed in any of the preceding claims, **characterized in that** the solids supplied to the briquetting stage (20) from the second reactor (16) contain between 0.1 and 5 wt-%, in particular about 0.5 wt-%, of magnesium oxide.

6. The process as claimed in any of the preceding claims, **characterized in that** in a heating stage (18) upstream of the briquetting stage (20) the solids reduced in the second reactor (16) together with the magnesium oxide are heated to a temperature

above 600°C, in particular about 700°C, and are introduced into the briquetting stage (20) in the hot condition.

7. The process as claimed in any of the preceding claims, **characterized in that** the solids containing iron oxide are reduced in the first and second reactors (14, 16) at temperatures below 700°C, in particular at about 630°C, to obtain metallic iron with a degree of metallization of more than 75 %, in particular more than 90 %.

8. Use of magnesite as flux material which in a process for producing sponge iron briquets, in particular as claimed in any of the preceding claims, is charged together with solids containing iron oxide, in order to increase the flowability of hot sponge iron during the supply from a reduction stage into a briquetting stage.

9. A plant for reducing solids containing iron oxide, in particular for performing a process as claimed in any of claims 1 to 7, comprising a preheating and/or calcining stage (2, 9), a first and a second reactor (14, 16) each constituting a fluidized-bed reactor, and a briquetting stage (20), **characterized in that** the preheating and/or calcining stage (2, 9) includes means (1) for the simultaneous continuous or discontinuous introduction of iron-oxide-containing solids and magnesite, and that upstream of the briquetting stage (20) a heating stage (18) is provided.

10. The plant as claimed in claim 9, **characterized in that** at least one of the two reactors (14, 16) is a fluidized-bed reactor with a circulating fluidized bed and/or an annular fluidized bed.

11. The plant as claimed in claim 10, **characterized in that** the first and second reactors (14, 16) have a plurality of nozzles or inlet openings for supplying a heated gaseous reducing agent such as hydrogen.

12. The plant as claimed in any of claims 9 to 11, **characterized in that** the preheating and/or calcining stage (2, 9) includes a first Venturi preheater (2) with a downstream first cyclone (4) and a second preheater (9) with a downstream second cyclone (11), the first and/or the second cyclone (4, 11) being connected with the first Venturi preheater (2) via conduit (5, 7) for recirculating dust separated from waste gas.